

7 August 1998

MEMORANDUM FOR COMMANDERS, MAJOR SUBORDINATE COMMANDS

SUBJECT: Resident Management System (RMS) Draft Deployment Plan

1. This memorandum provides a proposed RMS Windows deployment plan for your information, planning, review, and comments.
2. The RMS is designated as USACE's standard construction contract management information system. It is designed to provide comprehensive support for construction managers. The RMS will focus on the construction execution phase of project life cycle management and will interface with other key USACE systems such as PROMIS and CEFMS, and later with the Standard Procurement System (SPS) which will replace SAACONS. It will apply to all construction contract work and project work managed by field construction offices (area, resident, project offices) regardless of program type, fund type, or contract type. It will also feed construction execution status information to PROMIS for review and decision making by project managers and commanders at all levels of USACE. An initial draft of RMS business rules and guidelines is provided at enclosure 1.
3. Development and testing of RMS in a Windows version are nearly completed. Based on current schedules, we expect approval in early September to begin to deploy RMS in USACE. Like other major systems deployments, our basic proposed strategy is to deploy RMS Windows in a series of phases, with each deployment phase consisting of two MSCs. Deployment of RMS Windows will require coordinated support and management. The proposed phased deployment schedule for RMS is provided at enclosure 2. Commanders will be asked to identify an RMS deployment coordinator for each MSC and a district team that includes the following key members:
 - a. District RMS deployment manager
 - b. District RMS database administrator
 - c. District RMS system administrator
 - d. District RMS principal trainer(s)

These duties are intended to be assigned to existing staff, preferably persons providing similar functions for other systems previously deployed and operating in the district. Guidance on specific duties and responsibilities of each RMS deployment team member is at enclosure 3.

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4. Training for RMS deployment will use a "train-the-trainer" approach and will consist of four primary components for each deployment phase. This training will supplement information provided in an *RMS Users Manual*, through *on-line helps* within RMS, and via an *RMS website*. Information on the RMS training strategy is provided at enclosure 4.

5. The RMS Windows is a client-server system. The Oracle software for the RMS database management will be provided from HQUSACE (see enclosure 5), and RMS application software will be accessible from an RMS Website or may be shipped via a CD. Deployment of RMS Windows in USACE will be coordinated by HQUSACE supported by the USACE RMS Center currently located in at South Pacific Division's Fort Irwin Resident Office. We will work in close coordination with USACE commanders and their staffs. Information on the information systems architecture and hardware supporting RMS is provided at enclosure 7.

6. Development and RMS Center support costs will be recovered via an annual site license fee for RMS. Based on current schedules, it is planned to begin application of this site license charge at the start of FY 99, after approval to deploy RMS. Guidance on estimated RMS site license fees was provided to commands by HQUSACE Resources Management Directorate in April of this year. This information is summarized at enclosure 6.

7. We realize that implementation of any new system will impact your operations to varying degrees. We look forward to working with you and your staff to implement RMS Windows in an orderly and effective manner. We ask that you give this deployment plan the appropriate level of attention to make sure RMS deployment USACE-wide will be efficient and effective. Additional guidance and information will be provided as we proceed on this important initiative to link the members of the team and enhance their effectiveness. Point of contact in Military Programs is Jim Lovo, CEMP-EC, (202) 761-4804.

FOR THE COMMANDER:

Encl

/s/

WILLIAM A. BROWN, SR., P.E.
Acting Director
Directorate of Military Programs

CF:

MSC CIM and DETS
DISTRICT COMMANDERS
DISTRICT DIMS and CON-OPS

ENCLOSURE 1

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SUBJECT: Resident Management System (RMS) Draft Deployment Plan

Draft RMS Business Rules and Guidelines

General Guidelines

1. Use of RMS will follow an “above the line” and “below the line” concept of operations. *Above the line* RMS data/use will be *mandatory* for all users. Above the line data/use will be kept to a minimum to provide users & commanders flexibility. *Below the line* RMS data/use will be at MSC, district, or field office’s *option*, as directed by commanders below HQUSACE.
2. Where applicable, RMS DOS use will continue until RMS Windows is functioning at the site. Transfer of data from RMS DOS to RMS Windows will be done using available RMS DOS-Windows data transfer software developed for this purpose. This transfer of RMS DOS records will be done on a selected basis, as required. Generally, completed projects, ongoing projects which are 50% or greater complete or ongoing short duration projects will not be transferred.
3. The RMS will interface with PROMIS, CEFMS and later with SPS to share construction contract information with these systems and managers using these systems. Accordingly, these RMS interfaces mean that PROMIS and SPS will not need to be deployed at field construction offices. This will minimize costs and complexity for construction field offices while supporting efficient, effective program management-led district operations. Because CEFMS supports other activities such as timekeeping, travel, training and financial commitment/ obligation actions, CEFMS will continue to be in place at construction field offices.

Above the Line Operations

1. RMS will be used for *managing construction work under all programs*, including Civil Works Construction, Military Programs, Environmental Programs, and Interagency/ Intergovernmental Support. Note: RMS is *optional* for CW operations & maintenance work.
2. *All construction contract work** will be loaded in RMS. This is necessary to capture and electronically report construction contract execution status to the district and to PROMIS via the RMS-PROMIS interface. Later, this will also allow input of contract execution data (mods) to SPS. Both PROMIS and SPS will link with managers and systems at various headquarters above the district. (Note USACE policy is that *all* work will be loaded into PROMIS. Implementation of this PROMIS policy will allow basic project and financial data for construction work to be pulled electronically into RMS via interfaces, rather than having to re-key these data into RMS).
* *Basic construction contract execution data will consist of elements that conform to the information needed by the HQ PM module (approximates the old AMPRS data elements in Construction Managers Report). This includes data needed to calculate the current working estimate (CWE) for military programs work, and similar summary data for other work. See General Guidelines item 2 above for guidance relating to ongoing contracts.*

ENCLOSURE 1 (continued)

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Above the Line Operations (continued)

3. Basic *quality assurance* comments required for *quality assurance* reports. These basic QA comments provide a record of on-site contractor-government activities, a link to evaluation of progress payment requests, and a basis for evaluating claims and resolving contract disputes.
4. All construction contract *progress and final payments* will be done by construction field offices using the *RMS-CEFMS progress payment interface*. This will support achieving efficiency, prompt payment, and paperless contracting objectives.
5. All construction *change requests* and *contract modifications* performed by construction field offices will be captured in RMS and passed to CEFMS and to SPS. (Note: this RMS-CEFMS-SPS interface for construction modifications will not be operational in the initial version of RMS Windows. Target is to have this interface developed, tested and available for use later this year.)
6. USACE design contracts, construction contracts, and combination (e.g., design-build) contracts will include technical specifications to require certain outputs (e.g., submittal registers, draft DD 1354 transfer documents, quality control reports, payment requests, contractor construction schedules, etc.) in RMS-compatible electronic formats. Appropriate technical guide specifications for A-E and construction contracts will be provided in deployment instructions.

Below the Line Operations

1. Loading the basic construction contract into RMS, recording execution status and issues, performing progress payments, and performing field office construction modifications will be *above the line* RMS operations. RMS Windows has many other capabilities that may be used to improve operations. These other features, data and uses of RMS will generally be *below the line* operations. Since construction contracts can range from \$200 million, multi-year, multi-funds, multi phase types of projects to \$20,000 single fund Job Order Contract task orders accomplished in a week, it is not practical to direct a *single approach* on RMS use for items such as submittal registers, quality control reports, all quality assurance reporting, lessons learned, correspondence, digital images, contractor scheduling and schedule evaluation, customer reporting, etc. However, it is anticipated that many of these RMS features will be used on many projects to improve the quality and overall effectiveness of our project delivery system.
2. USACE customers will not tie directly into RMS. Of course, customers may be provided printed or electronic copies of standard or customized RMS reports. It is also planned that selected RMS reports, along with selected PROMIS and CEFMS reports will be available to customers via a composite USACE reports website. The type, amount, and method of RMS information provided to customers will be decided by MSCs and districts.

ENCLOSURE 2

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Proposed Schedule for Phased RMS Deployment

Phase 1

Sep-Oct 98: South Pacific Division

Mid-Sep/Oct 98: Southwestern Division

Phase 2

Nov-Dec 1998: Lakes and Rivers Division

Mid-Nov-Dec 1998: Huntsville Engineering and Support Center

Phase 3

Jan-Feb 1999: South Atlantic Division

Mar-Apr 1999: North Atlantic Division

Phase 4

May-Jun 1999: Northwestern Division

Jul-Aug 1999: Mississippi Valley Division

Phase 5

Sep-Oct 1999: Pacific Ocean Division

Nov-Dec 1999: Transatlantic Program Center

ENCLOSURE 3

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Guidance on RMS Deployment Team Members

1. **General:** Deploying RMS Windows within a MSC or district will be a big job. Planning and teamwork are keys to success. RMS is planned to be deployed in a phased manner both within USACE as a whole and within each MSC. A phased approach is planned to avoid overloading limited management and support resources, to control risks, and to incorporate lessons learned. Since construction managers are located away from the district headquarters office, a significant part of the deployment effort will take place out at the construction area office, resident office and perhaps at the project office.

2. **Identification of MSC Coordinator for RMS Deployment:** HQUSACE and the RMS Center will coordinate deployment planning and execution activities through each MSC. Accordingly, each MSC will identify an individual or team to serve as the MSC-wide coordinator.

3. **Identification of the District's RMS Deployment Team:** Successful deployment and operation of RMS require a *team effort*. Since RMS Windows interfaces with the Corps financial management information system (*CEFMS*), the project management information system (*PROMIS*), and will interface with the incoming DOD contracting information management system (*SPS*), this team needs to work closely with district resources management, project management and contracting staff as well as construction and information managers at the district. Finally, because a standard system such as RMS impacts *all* operations at a district, the senior leadership (e.g., district commander and DDPM) also must be aware, knowledgeable and involved in RMS deployment planning and execution.

Here are the recommended key members of the **district RMS deployment team**:

a. **District RMS Deployment Manager:** the RMS deployment manager is an individual designated by the district leadership as the person responsible for *overall leadership and management* of all activities relating to RMS deployment within the district, including construction field office sites. The RMS deployment manager will coordinate with various information management, construction, program management, financial management, contracting and other personnel within the district, at the parent MSC and at the USACE RMS Center, to effectively plan and implement a successful RMS deployment within the district. After implementation of RMS within the district, this person serves at the district's *RMS operations and support coordinator*. This person should have good leadership and teamwork skills, a working knowledge of information systems/technology, and the trust and confidence of the command and construction leaders within the district

Here are the main *duties and responsibilities* of the **District RMS Deployment Manager**:

- Ensure other members of RMS Deployment Team are designated & fulfill their roles.

ENCLOSURE 3 (continued)

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- Provide effective planning, leadership and follow through for all RMS deployment activities.
- Ensure continuity of operations in case of personnel changes within the district.
- Coordinate district-level RMS issues between district, parent MSC, and USACE RMS Center.
- Ensure development of a specific written plan for RMS deployment within the district.
- Identify, schedule and coordinate all activities related to RMS implementation within the district and provide oversight of these activities.
- Ensure that necessary hardware, software and communication requirements and issues are identified and solved in a timely manner.
- Keep leadership and functional managers involved and informed on all relevant RMS deployment issues.
- Coordinate the training of district RMS data base administrators, RMS systems administrators, and RMS principal trainers, and ensure completion of training in a timely manner.
- Ensure that written instruction, information and standard operating procedures are adapted or developed as necessary to support successful district RMS deployment and operations.
- Monitor and coordinate RMS post-deployment operations, including coordination of problem identification and resolution within the district, to ensure optimum RMS operations/use.
- Monitor, document and report RMS lessons learned within district, parent MSC and with the USACE RMS Center.

b. **District RMS Database Administrator:** As a client-server enterprise system, RMS Windows will require the identification and designation of an RMS database administrator. The principal responsibility of the RMS DBA is to oversee the establishment of the RMS database and ORACLE database software on all appropriate servers, and to ensure the continuous operation and maintenance of the RMS database system in support of overall RMS operations.

The main responsibilities of each district **RMS database administrator** are:

- Install and maintain RMS databases and associated ORACLE software
- Provide RMS users with access to the RMS database by creating user ID's
- Perform RMS system backups and recoveries as required
- Perform RMS database maintenance activities

ENCLOSURE 3 (continued)

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c. **District RMS System Administrator(SA):** The initial responsibility of the RMS system administrator is to assist in the implementation of RMS Windows by ensuring that the operating system is functional for RMS users at the various sites within the district. Subsequent to implementation of RMS, the SA provides daily support in order to keep RMS operating effectively and efficiently at all sites.

The main responsibilities of each **RMS system administrator** are:

- Create users and user ID's on the UNIX operating system
- Install the RMS operating system on all client computers
- Create file space on the RMS database
- Ensure adequate communication and hardware configurations
- Assist in implementing RMS at district sites
- Maintain information and data supporting RMS database operations

d. **District RMS Principal Trainer(s):** District RMS training will use a “train-the-trainer” approach. Two or more designated individuals from the district will be brought to a central location and provided a week of intensive training by the USACE RMS Center staff in use of RMS Windows. After this centralized train-the-trainer experience, the district's principal RMS trainers will organize and conduct RMS training for district office and field office RMS users.

At select large districts, USACE RMS Center staff will come on site to assist in this district-level implementation training. At smaller districts, USACE RMS Center staff will provide remote assistance and consultation, and on site training assistance as necessary. At larger districts, such as Baltimore, Savannah, Sacramento, Fort Worth, Seattle, Omaha, Louisville, it is recommended that two or more individuals be designated as district RMS principal trainers. At districts such as Walla Walla, Buffalo, Little Rock, Charleston, etc. one principal RMS trainer may be adequate.

The district's RMS principal trainer will work closely with the MSC RMS deployment manager and other members of the RMS deployment team to identify all primary and secondary RMS users, identify those to receive RMS training, set up training schedules, coordinate training facilities, equipment, and supplies, and conduct the training for all RMS users within the district. The RMS principal trainer will also coordinate through the district RMS deployment manager with the USACE RMS Center on RMS training activities. This latter activity will also include feedback and evaluation from students on the RMS user training. The district RMS principal trainer will also make provisions for refresher training when needed, and train new RMS users.

This person should have a good knowledge of construction contract management business processes, overall roles and relationships within the district, good communication and human relations skills, and a working knowledge of information systems/technology.

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Concept for Training

Training for RMS will be done in phases corresponding to the planned RMS deployment schedule. The training will be provided using the “train-the-trainer” concept. Training of a district’s trainers will be done at a centralized location for each deployment phase. The district trainers will then return to their districts and in turn lead the training for the district’s RMS users. Training phases consist of the following components:

- a. Three day *RMS information systems technology training session* by the USACE RMS Center for district RMS deployment manager, RMS system administrator, and RMS database administrator from each of the districts included in the specific deployment phase.
- b. Five day *RMS train-the-trainer session* by USACE RMS Center staff for district RMS principal trainers from each of the districts included in the specific deployment phase.
- c. District RMS principal trainers provide one week on site *RMS user training* for each district’s construction staff at a central location within the district.
- d. Two-three day *RMS Report Writing Workshop* (optional) by USACE RMS Center for select district staff wanting to develop specialized or custom reports or system use.

The *RMS information systems technology* training will be provided during the first week of each deployment phase, the *RMS train-the-trainer session* will be provided during the third week of each deployment phase, and the *RMS user training* at the district will be done during the fourth-fifth week of each deployment phase.

For the larger districts, the USACE RMS Center will provide on site training assistance during their *RMS user* training. Help desk and remote support will be available for all districts. Since RMS Windows has the simplicity and intuitive characteristics of all Windows-based products, and will closely match the functionality of the RMS DOS currently being used on a voluntary basis by a number of districts, user training should be less intensive than fielding of other large systems.

The training strategy will be revised and refined to incorporate lessons learned as deployment progresses.

ENCLOSURE 5

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Draft of Ordering & Distribution Procedures for Oracle Data Base Management Software for RMS Windows

- 1. Background.** In contrast to the stand-alone DOS version of RMS, the Windows version is a client/server application. The Oracle relational database management system (RDBMS) will be used in this RMS Windows client/server environment. The HQUSACE Directorate of Information Management established a Corpwide licensing agreement with Control Data Corporation (CDC) for distribution and maintenance (upgrade) of the Oracle database software. As part of each deployment phase, districts will identify their specific Oracle database software requirements for RMS Windows. These Oracle software requirements will be reviewed and submitted through the appropriate MSC to HQUSACE as part of the RMS deployment planning. After review and approval, the appropriate Oracle software will be shipped to the district RMS deployment manager for installation in those districts being deployed in that phase. Districts will be responsible for installing, documenting, and maintaining these Oracle client/server software.
- 2. Oracle Cost.** The annual maintenance cost and PRIP payback for the capitalized cost of the Oracle client/server license purchase will be \$270 per *fiscal year per concurrent user*. The HQUSACE Directorate of Information Management will coordinate with the CDC contractor on the distribution of the required Oracle licenses for each RMS deployment phase, and will handle the billing of annual Oracle license costs for RMS through its CEAP maintenance process. Oracle charges are a full charge per fiscal year or any part of the fiscal year. The contract with the Oracle vendor does not allow for proration of license charges for partial year usage.
- 3. Concurrent Users.** Each district annual Oracle license charge will be based on the number of *concurrent users*. The total number of *concurrent users* is the total maximum number of estimated RMS users logged on to RMS *simultaneously* at any given time during a day. If a user is logged on to RMS (Oracle) *simultaneously* with others, regardless of location (e.g., field laptop, PC connected via a LAN at the Resident Office, or a PC at the district connected to the CEAP server), that user is counted as a *concurrent user* for licensing purposes. The overall number of copies of the Oracle software or the number of RMS servers or clients is not the single determining factor for identifying the number of *concurrent* RMS users. No single RMS user performing one function can be counted as more than one concurrent user (i.e., if a user synchronizes the database on his laptop to a main server, he counts as one user). However, if there are 15 PCs/laptops that access the RMS/Oracle server, and 5 are estimated to be logged on RMS/Oracle server simultaneously at any given time, this counts as 5 *concurrent users*, and should be reported as such. This particular office in the preceding example will then only be charged for 5 rather than 15 *concurrent users* at \$270 per *concurrent user*.

ENCLOSURE 5 (continued)

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Draft of Ordering & Distribution Procedures for Oracle Data Base Management Software

4. **District Reporting of Concurrent Users.** It is important that the district RMS database administrator determine and report the best estimate of each district's RMS *concurrent users*, based on an analysis of *peak* simultaneous RMS usage on any given work day. The nature of field construction management is that a number of personnel are out on the job site for significant portions of each day, in contrast to district office personnel. Careful analysis will ensure that each field office pays appropriately as is required by the licensing agreement entered into by USACE.

5. **Specific Ordering Instructions for Oracle Software.** Each district in a specific deployment phase will be requested to identify and report (through its MSC) several items on their specific RMS servers before distribution of the Oracle database software can be made. Specific instructions detailing the required information and its format will be distributed as part of the deployment instructions for each phase. Information required will include the number of *concurrent users*, type of server hardware, points of contact, and other information.

ENCLOSURE 6

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Estimated RMS Site License Fee Structure

<u>Organization</u>	<u>Full Year FY 99</u>
MVD	
MVM	\$ 11,529
MVN	\$ 19,215
MVS	\$ 26,901
MVK	\$ 15,372
MVR	\$ 11,529
MVP	\$ 38,430
 NWD	
NWK	\$ 23,058
NWO	\$ 61,488
NWP	\$ 7,686
NWS	\$ 26,901
NWW	\$ 7,686
 LRD	
LRH	\$ 23,058
LRL	\$ 38,430
LRN	\$ 19,215
LRP	\$ 11,529
LRB	\$ 15,372
LRC	\$ 15,372
LRE	\$ 34,587
 NAD	
NAB	\$ 69,174
NAN	\$ 53,802
NAO	\$ 23,058
NAP	\$ 19,215
NAE	\$ 26,901
NAU	\$ 49,957
 SAD	
SAC	\$ 11,529
SAJ	\$ 26,901
SAM	\$ 73,017
SAS	\$ 46,116
SAW	\$ 11,529

ENCLOSURE 6 (continued)

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Estimated RMS Site License Fee Structure

<u>Organization</u>	<u>Full Year FY 99</u>
SPD	
SPL	\$ 69,174
SPK	\$ 19,215
SPN	\$ 7,686
SPA	\$ 19,215
SWD	
SWF	\$ 26,901
SWG	\$ 11,529
SWL	\$ 7,686
SWT	\$ 34,587
POD	
POF	\$ 15,372
POH	\$ 15,696
POJ	\$ 23,058
POA	\$ 19,215
TAC	\$ 26,901
HNC	\$ 15,372

ENCLOSURE 7

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RMS Information Systems Technology

(See USACE IM web document on "PC Guidance" for latest guidance at <http://www.usace.army.mil/im/ceimp>)

1. Specific hardware and software necessary to support RMS Windows at each site depend in part on the number of *concurrent users*, other applications on the hardware, and existing systems infrastructure for the site. The open architecture of RMS Windows allows it to work on a variety of platforms; recommended platforms are listed below:

a. **Database Server Software Characteristics:** Oracle 7.3 (newest version), in *Enterprise Server*, *Workgroup Server*, and *Personal editions*. (Note: this software will be centrally provided from HQUSACE to the *district RMS deployment manager*. See enclosure 5 for information.)

b. **Database Architecture:** The RMS database should be located as high up the USACE communication architecture as possible, based on district communication capabilities, field performance testing, and user requirements. Enclosure 7 a. illustrates various district RMS architectures. Where RMS sites have good connectivity (e.g., T-1) to the CEAP processing centers at Portland and Vicksburg, RMS databases may be located on the CEAP servers on the centrally managed UNIX hosts. Where an RMS field site has good connectivity to its district office, the RMS database server can be located there. For those RMS sites without adequate connectivity (i.e., satisfactory RMS database performance) either to the district or the CEAP servers, they will have a *workgroup* installation of Oracle on a local server. This installation of an Oracle database should be considered a temporary solution dependent on future developments in technology and communications, and associated costs. Databases on local servers within a district will replicate to RMS, CEFMS and PROMIS databases located at the CEAP centers.

c. **RMS Application Software Characteristics:** Written in *C++ Builder* using *R&R Report Writer* for the reports, the *Borland Database Engine (DBE)* for middleware and *Oracle SQL*Net v2* for connectivity.

d. **RMS Operating System Requirements:** Works on various operating systems including *Windows NT* (3.51 and 4.0), *UNIX*, and *Windows 95*. RMS also can be made to work with *Novell NetWare 4.1*, but this is a more difficult and problematic arrangement that is not recommended.

e. **RMS Database Server Requirements:** (minimum) Pentium 166 Mhz with 64 MB RAM and 500 MB storage.

f. **RMS Client PC Requirements:** (minimum) 80486, 66 Mhz with 16 MB RAM, Windows 95; 32 MB RAM, with 300 MB storage Windows NT.

ENCLOSURE 7 (continued)

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RMS Information Systems Technology

g. **Network Communications Requirements:** (minimum) Need TCP/IP for all sites with servers and 28.8 bps modem for up-downloading/replication to CEAP Center.

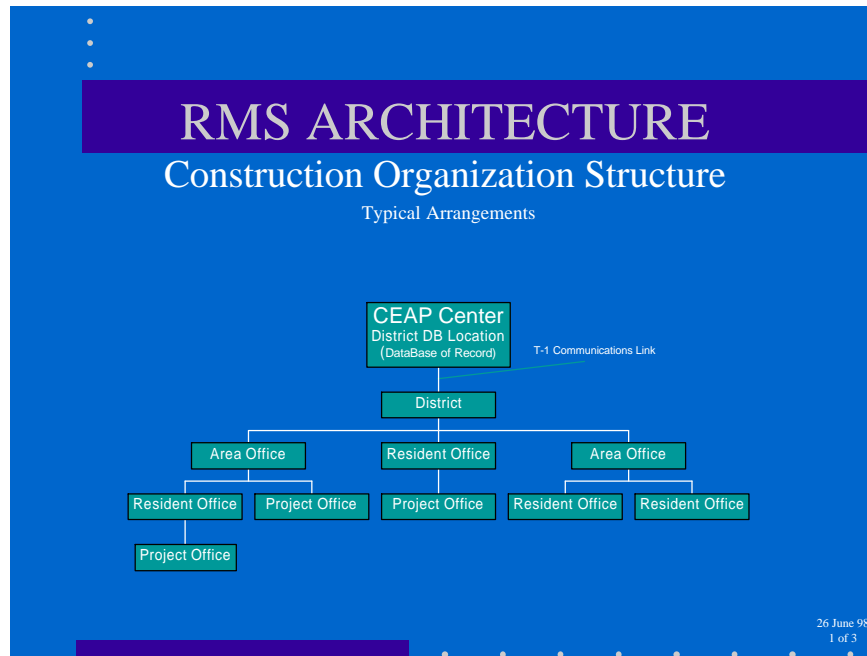
h. **Compatibility with Commercial Scheduling Software:** RMS will exchange scheduling information with construction contractors using commercial scheduling software via the USACE Standard Data Exchange Format (SDEF) developed by USACE's Construction. Engineering Lab.

i. **Replication:** A separate application for replication will be included with RMS Windows to allow local RMS databases to automatically replicate from site-to-site within the district, and from local sites to the CEAP centers. This will allow replication scheduling at various times/intervals (e.g., 1-2 times per day), dependent upon management needs.

ENCLOSURE 7 a.

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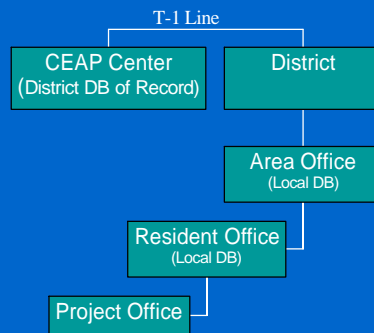
RMS ARCHITECTURE

Interim RMS Communication Configuration For Offices with less than ISDN Lines

Communicate, Update Local & District DBs by Replication

Principles for Database Location

1. Locate the "Master" version of the RMS database at the CEAP Center, insure stability and reliability. This is the database of record.
2. Place local RMS database(s) at a level which provides reliable and responsive systems performance. The lower the RMS DB level, the more database administration is required, but system performance improves.

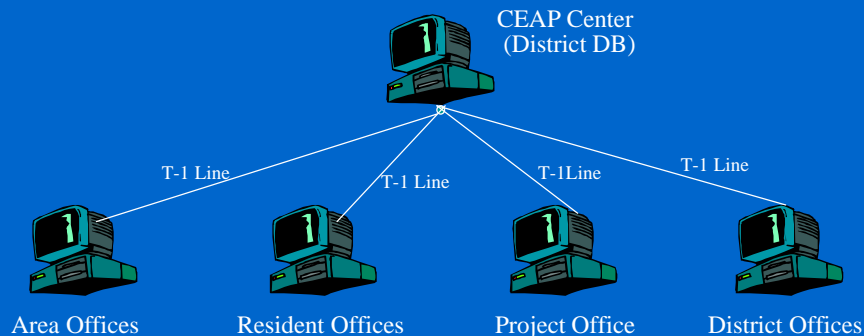


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RMS ARCHITECTURE

Ideal/Target RMS Communication Configuration

(All Sites have ISDN or better Communication Lines)



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